

Ross, R. G.

Name: R\_ROSS\_\_

Project: CHEM

Department: Chemistry

Project Description: The purpose of this project can be summarized as follows: (A) The taking of high rate data transmission to write experimental analysis programs so as to develop programs for the routine analysis and finished output of mass spectra. The transmission is through the 270Y-270X channel. The project plans to develop this interface to service three mass spectrometers (ALTAS CH<sub>4</sub>, AEI MS9, and a FINIGAN 1015 quadropole). The taken spectra are then to be fed to the Artificial Intelligence group under the supervision of J. Lederberg and E. Feigenbaum to be used in their dendral investigations. (B) Another use of data transmission through the 270Y is to take spectropolorimeter measurements and then analyze these spectra for form, bandwidths and similarities between derivatives for theoretical projections. (C) The project mentioned also includes a battery of utility programs for metastable analysis, chemical rate analysis, C13 substitution ratios and other routine analysis that the Chemists wished programmed.

Roth, W. T.

Name: W\_ROTH\_\_

Project: COMP

Department: Psychiatry

Project Description: For the period prior to January 1, 1969 I have submitted two papers for publication based on using the ACME system for the analysis of electroencephalograms (EEG's) and the statistical processing of the results.

I will be at Stanford until June, 1969. During the next 5 months I will be doing a project involving the computer analysis of habituation of the evoked response and EEG desynchronization. Also an attempt will be made to distinguish states of arousal produced by emotional stimuli. Analysis methods include spectral density calculations based on the "fast" Fourier transform, period analysis (Burch), and response averaging to improve the signal-to-noise ratio.

Since 90+% of the grant goes to stipends of four residents in psychiatry, faculty salaries, and other expenses such as tuition, Dr. Moos feels that the 95% support level is most appropriate at the present time.

Saunders, A. M.

Name: AMSAUNDE

Project: MASTCELL

Department: Pathology

Project Description: Multiple numerical parameters are determined for single cells under varying conditions of staining and animal pre-treatment. Analysis of results lead to conclusions on the type and quantity of polyanion in the mast cells under study (once thought to be just hepanin).

Hence the project involves the chemistry of Heparin type substances at the single cell level, the maturation and biology of the mast cell in rats and people, and development of methodology, mostly centering on fluorescence microscopy.

Saunders, A. M.

Name: AMSAUNDERS

Project: SPHERES

Department: Pathology (Genetics)

Project Description: Cells measured by a rapid sensor system. Data collected on tape and records will be transformed from a LINK to ACME for storage and analysis.

Savageau, M. A.

Name: M\_SAVAGEAU

Project: KINET

Department: Cardiology

Project Description: I am concerned with the kinetic behavior of systems of enzyme catalyzed reactions. During the coming year I expect to use the ACME computer in three ways. First, I will use it to store and process experimental data from enzyme systems. Second, a nonlinear curve fitting procedure will be implemented to estimate the kinetic parameters for the mechanisms yielding the experimental data. Third, the solution of the system of differential equations will be simulated to obtain the temporal behavior of these enzyme systems.

Grant No. FR00311-03  
Section 111-B

Cavalli-Sforza, L. L.

Name: L\_SFORZA

Project: PAVIA

Department: Genetics

Project Description: Programs on storage were mostly developed for simulation of population genetics studies. One of them was developed for the I.C.R.O. course, and is still being used for research purposes. It deals with genetic drift in a human population and takes care of the effects of age structure. Another simulates nutrition, drift and selection in a haploid population, or in a diploid population with additive selection. Others simulate the propagation of hemoglobin mutants in Africa. I will have to use these programs in the coming year, but it is difficult at present to estimate actual use - except for hoping that it will be less intensive. It will be perhaps 20% of what it was in the period for which sample billing may be carried out.

I am also planning to use ACME for a course for medical students, to teach computer use in simulation experiments that may illustrate the meaning of major statistical methods, and some special use of statistics in medical research.

Smallwood, R. D.

Name: R\_SMALLW

Project: MEDIPLAN

Department: Engineering - Economic Systems

Project Description: The Stanford Medical Facilities Planning Group is engaged in a system planning study for the design of the new Stanford Medical Care Facilities. The primary goal of this group is the development of systematic quantitative procedures for evaluating the relative utility of alternative plans for the new facilities. Because of the emphasis on quantitative analyses and because of the magnitude of the problem, much of our work will be directed at large scale computer simulations that will aid in the evaluation of alternative macro organization strategy for the facilities.

At the present time we are completing the development of several of the computer programs that will serve as intrinsic components to the overall simulation system. We have also nearly completed the task of gathering the data that is necessary for estimating the parameters of the simulation. Current plans are to complete the integration of these components by the spring of 1969, to use this tool in the actual evaluation of alternative plans, and to write up the results by June.

Smith, N. T.

Name: NTSMITH

Project: BABOONS

Department: Anesthesia

Project Description: This particular project (BABOONS) simply involves transfer of manually obtained and calculated data into ACME files. Multiple regression and correlation analyses are then performed on these data. Data obtained by destructive methods (thoracotomy, catheter placement, etc.) are compared to those obtained by nondestructive methods (microphones, accelerometers, etc.). It is hoped to replace the former with the latter.

We have an enormous amount of data which we are preprocessing with our analog computer. We would like to transfer this data directly to ACME for analysis. However, because of limited funds, need for programming assistance, and difficulties with ACME, this will not be possible in the foreseeable future.

Smith, N. T.

Name: NTSMITH

Project: MAC

Department: Anesthesia

Project Description: This project involves calculation of cardiovascular data from variables obtained in normal volunteer subjects and patients. No statistical analyses are performed through this program; rather they are performed separately using standard programs.

Smith, P.

Name: p\_smith

Project: PREMIES

Department: Pediatrics

Project Description: This data will be used in any study involving premature or sick newborn infants cared for in the Stanford nurseries. Such items as birth weight, gestational age, system disease, etc., will be correlated by pairs. For further information, contact the Premature Research Center.

Smith, P.

Name: p\_smith

Project: ventl

Department: Anesthesia

Project Description: This project (ventl) is to find out if any parameter of mechanical ventilation (rate, pressure vt, i.e., ratio) influences  $paO_2$  in newborn infants with respiratory failure. So far ACME has been used to store the measured variables and perform statistical maneuvers such as correlation coefficient calculations. A program for estimation of venous lung shunt is included.

Smith, R. C.

Name: RCSMITH

Project: FAMILY

Department: Medical Student

Project Description: I am a medical student who has been using the ACME Project for my own research. I am a medical student pursuing an M.D.-PhD. program at Stanford. Funds for my own research have been supplied through the Dean's Office, the General Research Support Fund.

The ACME file has been used to store analysis data from an experimental study of family structure which I conducted during the past year. The project contains one data file (SDM) and a number of program files to analyze the data. Most of the analysis has been completed during the past year, but some still remains to be done. I have also done some socio-physiological studies of Kidney transplant patients, data which I will be entering in the near future. I plan to make intermittent use of ACME for further analysis of data from these projects during the next six months. However, because my clinical responsibilities will become heavy after January, I plan to put the major file (SFDM) on disc or tape storage, to be recalled when I have more time for further detailed analysis of raw data.

Two papers are currently being prepared from the family research described above. If specific NIH grant support for use of ACME should be listed in publications, please send me data on and account number of the grants.

Solomon, G. F.

Name: G. F. SOLOMON

Project: STRESS

Department: Psychiatry

Project Description: We are concerned with the relationship of various forms of stress and environmental manipulation to immunity. The "Stress" program is one that evaluates the significance of differences in antibody titers among control and experimental groups using a Kruskal-Wallis test of rank ordering of serial dilution tube numbers. This program is applicable to all of our work that involves antibody titrations by serial dilution, and is particularly useful for the immobilization assay of anti-flagellar antibody. Current projects which will use this program involve the effects of stress responsive adrenal hormones on antibody synthesis.

Publications:

Solomon, G. F., Levine, S. and Kraft, J. K.: "Early Experience and Immunity" Nature, 220:821 (Nov. 23) 1968.

Solomon, G. F.: "Stress and Antibody Response in Rats", Int. Arch. Allergy & Applied Immunology, in press.

Stewart, L. H.

Name: L\_STEWAR

Project: DREAM

Department: C. J. Jung Institute (San Francisco)

Project Description: The research aims of the Institute is the establishment of an archive of classified psychological information centering around such primary data as dreams, and other unconscious material. Also included will be psychological test data, clinical assessments, and systematic demographic information.

These archives will be valuable in extending our understanding of unconscious material; i.e., dreams and fantasies, and will enhance our comprehension of the relationships between the ego and the unconscious.

Methods for the rapid collation and analysis of data are being considered. This includes techniques for the indexing and preparation of concordances of clinical material drawn from history, archaeology, mythology, comparative religion, and other sources. Such techniques will facilitate the search seeking the connection between themes from historical and cultural sources mentioned above. The availability of such data will be of immense value in the training of analysts, in the general practice of analytical psychotherapy, and in extending the frontiers of our present knowledge of the human psyche.

Stillman, R.

Name: R\_STILLM

Project: PSYGAME

Department: Psychiatry

Project Description: Our project involves the use of an interactive system for the interviewing and testing of psychiatric patients.

The work has appeared as a presentation to The American Psychiatric Association's annual meeting and as a publication in the January 1969 issue of the American Journal of Psychiatry.

We are attempting to use the computer and a peripheral CRT display for anticipated psychological testing. This includes terms from standard psychological tests, and novel tests which the computer is especially suited for.

Stillman, R. A.

Name: RASTILLM

Project: DRAFT

Department: Chemistry

Project Description: The purpose of this project can be summarized as follows: (A) The taking of high rate data transmission to write experimental analysis programs so as to develop programs for the routine analysis and finished output of mass spectra. The transmission is through the 270Y-270X channel. The project plans to develop this interface to service three mass spectrometers (ALTAS CH<sub>4</sub>, AEI MS9, and a FINIGAN 1015 quadropole). The taken spectra are then to be fed to the Artificial Intelligence group under the supervision of J. Lederberg and E. Feigenbaum to be used in their dendral investigations. (B) Another use of data transmission through the 270Y is to take spectropolorimeter measurements and then analyze these spectra for form, bandwidths and similarities between derivatives for theoretical projections. (C) The project mentioned also includes a battery of utility programs for metastable analysis, chemical rate analysis, Cl<sub>3</sub> substitution ratios and other routine analysis that the Chemists wished programmed.

Stillman, R. A.

Name: RASTILLM

Project: DREAMS

Department: Chemistry

Project Description: See project description for DRAFT.

Strickland, R. G.

Name: R\_STRICK

Project: GASTRIC

Department: Medicine - Gastro-Intestinal Division

Project Description: I am involved in clinical research projects relating to gastric secretory function tests and have used the ACME Computation Center over the past year for filing of data collected from these projects and for statistically analyzing the results obtained. I plan to continue these usages through July 1969.

One publication, 'The Effect of Prednisolone on Gastric Structure and Function in Man', has been accepted and will be appearing shortly in GASTROENTEROLOGY. Other publications have either been submitted or are in preparation now.

Stocker, B.

Name: B\_STOCKER

Project: Stm

Department: Medicine - Micro

Project Description: My main project concerns genetics and physiology of Salmonella typhimurium - in particular somatic lipopolysaccharide, flagella and motility, and plasmids, especially R and colicine factors. I am co-investigator in Dr. E. Lederberg's project, which concerns mainly recombination-deficient mutants in the same organism. Main ACME usage so far has been in statistical analysis of data from experiments concerning pathogenicity of lipopolysaccharide mutants (estimations of LD50, rate constant for clearance of bacteria from blood stream, harmonic mean times-to-death, significance tests, etc.). I expect to continue such usage. If my grant is renewed and if I can hire suitable help, I expect to use ACME also for storage and analysis of extensive stock-culture data concerning strains with numerous genetic markers, and for participation in a co-operative scheme for exchange of such data for several Salmonella stock collections.

Stryer, L.

Name: L\_STRYER

Project: NANOS

Department: Biochemistry

Project Description: The principal aims of the research are: (1) to acquire an understanding of mechanisms of electronic excitation energy transfer; (2) to develop novel fluorescence and phosphorescence methods which can provide detailed information concerning the structure and dynamics of biological macromolecules; and (3) to apply these optical techniques to obtain insight into aspects of the structure and function of selected proteins.

The experimental approach which is used in these studies involves: (1) the synthesis of model compounds which serve to define relationships between observable emission parameters and structure; (2) the synthesis of fluorescent and phosphorescent labeling reagents which have appropriate spectral properties and can be specifically attached to defined sites on proteins; and (3) the development of optical instrumentation for kinetic measurements in the nanosecond time range and for the detection of fluorescence and phosphorescence emission from membranes and cells.

Stuedeman, D. L.

Name: D\_STUEDE

Project: ADMIN

Department: Genetics

Project Description: I keep an inventory of IRL capital equipment, update it occasionally, use the computer to locate items, sort by room or whatever is required. It can be used for preparing reports to sponsors and performing listings in various forms. I also apply the ACME system on various mathematical calculations used in my work, including a study of the University's retirement insurance program.

Singerlin, W. T.

Name: WTSUMMER

Project: BIOCHEM

Department: Dermatology

Project Description: To study biochemical control of collagen formation via proline/hydroxyproline (ratios).

Thathachari, Y. T.

Name: YTHATHA

Project: DOPA

Department: Dermatology

Project Description: Structure of melanins. Melanin is a polymeric pigment widely distributed throughout the plant and animal kingdoms. It has unusual physical and chemical properties. Using ACME as a real time terminal models of the molecular structure of melanins were generated starting with the known shape of the subunits and using various criteria for the linking of adjacent units. By watching the output periodically the flow of the computation could be directed at will. For these generated models various measurable physical data were computed and compared with the experimentally derived values. Programs were especially written for these calculations and were found to be very promising and fruitful. Some of the results have been published and presented in conferences and more publications are under way. In view of the success of the techniques the work is being continued.

Radioactive tracer techniques for the detection and therapy of melanomas (suggested by Blois). Improvement on the conventional scanning techniques making more efficient use of observations with a real time feed back between the collection of data and their processing. Simulated experiments using ACME as a real time terminal are under way to make a choice between alternate techniques. When this decision is made we plan to commission the equipment and the interfacing with ACME.

References:

X-ray diffraction studies on melanins paper containing some of the preliminary results presented at the Annual American Crystallographic Conference at Buffalo, New York during August 1968.

Physical studies on melanin paper containing the results of the Monte Carlo techniques on the structure of melanin - to appear in the January 1969 issue of the Biophysical Journal.

X-ray diffraction studies on melanins paper describing the inversion of the high precision X-ray diffraction data as a radial distribution function presented to the annual biophysical society meeting to be held in Los Angeles, California in February, 1969.

Tickner, E. G.

Name: EGTICKNE

Project: MURMURS

Department: Palo Alto Medical Research Foundation

Project Description: We intend to perform spectral analysis of murmurs recorded with intracardiac microphones in experimental animals before and after making cronic implants of known sizes. We hope to correlate the onset of murmurs and their characteristics with the instaneous flow rate.

Trudell, J. R.

Name: J\_TRUDELL

Project: MASS SPE

Department: Chemistry

Project Description: I am working on computerized interpretation of mass spectroscopy. At present information is visually taken from strip chart recordings and entered into the computer through a keyboard terminal. The computer then assimilates the data and presents the results in tabular form.

In the near future the data will be acquired on-line using the 270X-Y system.

Tucker, R. B.

Name: RBTUCKER

Project: MS

Department: Genetics

Project Description: The project consists primarily of developing a computer system for the control of a mass spectrometer-GLC apparatus and the collection, analysis, and presentation of the resulting data. Presently this work takes on two forms: developing a set of ACME/PL1 programs which control the apparatus utilizing a LINC computer as an I/O buffer, and investigating the capabilities of the ACME 1800 computer pursuant to using it (in a time-shared mode) in place of the LINC. When replacing the LINC with the 1800 it will be necessary to build additional hardware to perform certain timing and logic functions now performed by the LINC. It is therefore essential that the operating parameters of the 1800 be accurately known.

Warrick, G.

Name: G\_WARRIC

Project: STEROID

Department: Psychiatry

Project Description: The present research in our psychophysiological laboratory revolves around the "averaged evoked response." We record a continuous EEG on magnetic tape when presenting selected stimuli. Afterwards it is necessary to take out the EEG from the recording for certain time periods after each stimulus and average from 25 to 100 curves. When more than one kind of stimulus is shown the EEG must be distributed according to specific stimuli and several averages calculated simultaneously.

ACME supply us with 3 analog input lines for reading of the EEG and corresponding signals. Our sampling rate is 4 msec and by reading 100 curves for 500 msec or 25 curves for 4 sec we use a storage space of 25000. After the curves are selected and averaged, they are returned through an analog output line and plotted on our X-Y plotter. The curves are also stored in digital form in the ACME file system.

We are presently having a second output line installed to give us a time base for the x-axis on the plotter.

The two output lines will be connected for more systematic results.

Weissman, I.

Name: I\_WEISSM

Project: THYMUS

Department: Pathology

Project Description: Our use of ACME has been limited to developing methods of applying statistical subroutines to our particular data needs. This has proved most valuable in handling volumes of data which required statistical analysis, but which was simply not feasible using ordinary calculators. For example, in the past year we have modified the chisquare and bastat subroutines to be able to compare 6 standard bits of data with up to 200 test items, giving the exact (p) values for each item. This has been incorporated into a paper which has been submitted for publication. The data analyzed in that paper had been obtained in 1963 and 1964. We have also studied the feasibility of setting up a program to analyze raw liquid scintillation spectrometry data from tissue samples, requiring analysis of 3 channels counting simultaneously within different "windows". Channels-ratios must then be obtained and compared to a plot of counting efficiency vs. channels ration, in order to obtain the actual disintegrations/minute/sample. Specific activities and fractional input activities must then be calculated, subtracting physical background counts (solution, bottles, filters) and control organ background counts. Until such programs are developed, and interfaced between ACME and our scintillation counters, we cannot properly study quantitative aspects of in vivo cellular migration streams in the lymphoid system.

Whitcher, C.

Name: C\_WHITCH

Project: ONCALL

Department: Anesthesia

Project Description: Computerization of the anesthesia call schedule is necessary because the present manual method has proved unsatisfactory. Scheduling is complex, excessive errors have occurred despite due care, and the time required to write schedules is costly in terms of professional and secretarial time.

The anesthesia consultant staff includes 1 to 3 research fellows, and 12 to 14 full-time faculty physicians. Duties, responsibilities, and needs of these 13 to 17 individuals are diverse, including teaching, research, further training, as well as the administration of operating room, obstetrical and other forms of clinical anesthesia. Night, weekends and holiday coverage must be scheduled to cover the various anesthetizing locations as well as vacations, sickness, and out-of-town meetings.

Schedules are regularly prepared at monthly intervals. However, changes of plans frequently occur, calling for schedule revision, at additional expenditure of staff and secretarial effort. Arrangement of schedule for night, weekend, holiday, and emergency coverage is filled with many problems and difficulties. For example, two nights on call in a row (except on weekends) is undesirable and each staff member has certain nights and weekends when he prefers not to cover. These reserved nights and weekends vary from week to week. Furthermore, call is rarely, if ever, popular. Each staff member willingly accepts his share, but none willingly accepts more than his share. It is important for purposes of good morale to be sure that this relatively undesirable work is evenly distributed and properly credited.

At least 10 different types of night call work have to be tallied and evenly divided, including first call with obstetrics on business days, first call without obstetrics on business days, first call on weekends with and without obstetrics, second call on weekends, second call on holidays, and third call Saturdays to accomodate Saturday scheduling. Such schedules would be complex enough if they could be assigned in simple rotation, and this might be done if the number of staff were constant throughout the year. However, the number of staff varies; and the fewer the staff, the more frequent the call. This factor is considered in tallying the calls. Gross tallying errors which have occasionally occurred have incited staff members to count up their weekends on obstetrical or other calls, with the finding that they have received more than their share, and understandably have asked, "How come?"

Whitcher, C. (Cont.)

Name: C\_WHITCH

Project: ONCALLA

Department: Anesthesia

Project Description: The computer program already worked out offers several advantages. A running tally is accurate and immediately available. Schedule revisions required by the staff will be rapidly available and will require a minimum amount of professional and secretarial staff time. Finally, the estimated savings in staff time should be noted: 12 hours per month secretarial and an equal amount of anesthetist's time which could be more profitably spent in other duties such as income-producing clinical work.

The Department of Anesthesia hopes that ACME will support this important clinical project.

Whitcher, C.

Name: c\_whitch

Project: Spctrm

Department: Anesthesia

Project Description: Spectral analysis of blood pressure sounds. Determine why blood pressure sounds are difficult to hear under adverse circumstances. The pilot project shows that part of the reason lies in their energy distribution. This work should be extended to verify this.

Wittner, W.

Name: W\_WITTNER

Project: AROGUESS

Department: Psychiatry

Project Description: (AROGUESS) The Influence of Correctly and Incorrectly Guessed Visual Patterns on Visual Averaged Evoked Response. This study deals with changes in the electroencephalogram (EEG) of human subjects under conditions of various "mental states". The EEG associated with certain visual stimuli in certain "mental states" will be averaged to obtain the so-called averaged evoked response (AER). The shape of the AER waveform reflects brain activity beyond the purely sensory-receptive component. For instance, the AER is influenced by such variables as attention, conditioning, and habituation.

In this study, young healthy males will be presented with a sequence of two types of visual stimuli which will alternate randomly. One presentation will consist of a cueing flash, an arrow pointing left, and a test flash. The other visual stimulus presentation will consist of a cueing flash, an arrow pointing right, and a test flash. Prior to each presentation, the subject will make a guess as to the type of upcoming presentation by pressing either a left-handed or a right-handed button.

On the basis of results of related studies by other investigators, it is assumed that the evoked response to correctly guessed arrows will differ from that evoked by incorrectly guessed arrows. One purpose of the study will be to ascertain whether indeed this is so. Furthermore, it is hypothesized that the AER induced by flashes following incorrectly guessed arrows will differ in shape from the AER averaged on flashes following correctly guessed arrows. The assumption is made that guessing correctly produces a different "state of mind" than guessing incorrectly and that this "state of mind" persists long enough to alter the AER to a rapidly following neutral light stimulus. The various AERs will be differentially averaged to prove or disprove the stated hypotheses.

The averaging of the EEG to obtain the AER will be done by the use of ACME computers. Our laboratory at the V.A. Hospital is connected with ACME by appropriate lines for the transmission of analog data. Once the various AERs are averaged, they will be analyzed and compared with each other, again by use of ACME facilities.

Should the hypotheses prove to be correct, further research will be conducted to investigate the effects of hormones on these parameters. For this reason this research is supported by Dr. David A. Hamburg's NIMH "steroid grant". Dr. Hamburg and Dr. Bert S. Kopell are involved in this research as my preceptors.

Wittner, W. (Cont.)

Name: W\_WITTNE

Project: AROGUESSE

Department: Psychiatry

Project Description: My plans for computer use between now and July 1969:  
The actual collection of data has been accomplished. Data are stored  
on magnetic tape. ACME facilities will be used for data reduction as  
soon as technical difficulties with the transmission lines are solved,  
hopefully before July 1969.

Wong, F.

Name: F\_WONG

Project: MEDONCOL

Department: Medicine/Oncology

Project Description: Patient and disease analysis - primarily to correlate  
drug responsiveness in cancer patients for educational and research  
purposes.

Wong, F.

Name: F\_WONG

Project: PLAN

Department: Radiology

Project Description: The research is still under way. We hope soon that  
we can use the computer to provide the radiation therapists with:

1. External beam treatment planning
2. Interstitial and intracavitary dose calculation
3. Data accession and retrieval

Wong, F.

Name: F\_WONG

Project: SUMMARY

Department: Radiology

Project Description: The project is designed for retrieval of cases and classification of cases from the tumor registration. The ACME is used:

1. To gather the case histories and follow-up information of patients with tumors treated by radiation therapy.
2. To quickly generate reliable data for the therapist's use in either research work or patient treatment.

Yguerabide, J.

Name: J\_YGUERA

Project: LUM

Department: Biochemistry

Project Description: The principal aims of the research are: (1) to acquire an understanding of mechanisms of electronic excitation energy transfer; (2) to develop novel fluorescence and phosphorescence methods which can provide detailed information concerning the structure and dynamics of biological macromolecules; and (3) to apply these optical techniques to obtain insight into aspects of the structure and function of selected proteins.

The experimental approach which is used in these studies involves: (1) the synthesis of model compounds which serve to define relationships between observable emission parameters and structure; (2) the synthesis of fluorescent and phosphorescent labeling reagents which have appropriate spectral properties and can be specifically attached to defined sites on proteins; and (3) the development of optical instrumentation for kinetic measurements in the nanosecond time range and for the detection of fluorescence and phosphorescence emission from membranes and cells.

Zackheim, H. S.

Name: H\_ZACKHE

Project: PSORIASI

Department: Dermatology

Project Description: The present study is a determination of serum copper and ceruloplasmin levels in patients with psoriasis as compared to other skin diseases and healthy controls. I anticipate at least 60 determinations. I will want the mean, range, and standard deviation on this data.

Zwick, M.

Name: M\_ZWICK

Project: CRYSTAL

Department: Biochemistry

Project Description: This project concerns the development of new theoretical techniques for the solution of protein crystal structures. The method currently used, "isomorphous replacement," generally requires a team of scientists working for a number of years with no guarantee of success. This method has the surprising feature that it makes virtually no use of a great deal of a priori stereochemical information about proteins: e.g., the bond distances and angles of the repeating pephile unit in the protein backbone or on the amino acid side-chains. Hence it is very plausible that new improved methods might be developed which utilize such information and which can solve protein structures much more rapidly and easily. In this project, attempts are being made to define a new set of variables which can specify the protein structure, which is much smaller and hence more easily determinable than the set of atomic coordinates. This new set of variables might conceivably be determinable simply from the X-ray intensities of the native crystal, i.e., isomorphous derivative may not be required. The new set of structure variables are designed to implicitly include the fact that a protein is a linear polymer folded up in some manner in three dimensions, and that this polymer has a set of well known bond distances and angles in its repeating unit and in its branching side chains.